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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/700,171	11/13/2000	Hirokazu Iguchi	001478	2138

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ARMSTRONG, WESTERMAN, HATTORI,
MCLELAND & NAUGHTON, LLP
1725 K STREET, NW, SUITE 1000
WASHINGTON, DC 20006

EXAMINER

LEE, RIP A

ART UNIT	PAPER NUMBER
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1713

DATE MAILED: 11/26/2001

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/700,171

Applicant(s)

IGUCHI ET AL.

Examiner

Rip A. Lee

Art Unit

1713

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 2 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1 and 2 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3. 6) ☐ Other: .

DETAILED ACTION

Claim Objections

1. Claim 1 objected to because of the following informalities: The claim recites the quotient η_{sp}/c . The definition of term c in the denominator is unclear. Appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 3,996,173 to Heichele *et al.* in view of U.S. Patent No. 5,693,699 to Bertelo *et al.*

The prior art of Heichele *et al.* relates to polyvinyl chloride molding compositions comprised of 80-98 % (by weight) of polyvinyl chloride, 2-20 % of an impact modifying resin, and 2-30 % of calcium carbonate (claim 1). Impact modifying resins include ABS, MBS and EVE copolymers. The reference does not disclose the use of graft copolymers.

The prior art of Bertelo *et al.* relates to a reinforcing composition for vinyl chloride polymer (claim 20 and col. 1, lines 22-23). The composition is comprised of calcium carbonate (claim 1) and an impact additive, such as ABS and MBS resins (col. 2, lines 60-61). Graft polymers are particularly preferred (col. 2, line 57), and according to the inventors, one such graft copolymer is that "described in French patents 2,551,446 and 2,551,447, the content of which is incorporated by reference (col. 3, lines 12-13)."

FR 2,551,447 to Meunier discloses an impact additive for polyvinyl chloride based thermoplastics (p. 1, lines 1-6). The additive is a graft copolymer having a backbone made from a C₂-C₁₂ alkyl acrylate, 0.5-30 % of a conjugated diene, and 0.02-10 % of a crosslinking agent containing two vinyl moieties (claim 1). The graft material is a C₁-C₄ alkyl methacrylate such as methyl methacrylate (claims 1 and 6). Divinyl benzene, ethylene glycol dimethacrylate, diallyl phthalate, and triallyl cyanurate are used as crosslinking agents (claim 2). In summary, the composition of the impact additive of Meunier is essentially the same as that claimed in the

present invention. Since this is the case, a reasonable basis exists to believe that it inherently possesses the same physical properties disclosed in the claims of the present invention, namely, a η_{sp}/c value of 1-5 at 30 °C for a 0.2 g/100 mL acetone solution. Since the PTO can not perform experiments, the burden is shifted to the Applicants to establish an unobviousness difference. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990).

Heichele *et al.* and Bertelo *et al.* both disclose similar compositions (*i.e.*, polyvinyl chloride, impact modifier, and calcium carbonate), and the latter reference shows that graft copolymers may be used in lieu of standard impact modifiers. Therefore, it would have been obvious to one having ordinary skill in the art to use the graft copolymer cited in Bertelo *et al.* in the composition of Heichele *et al.* in order to make material based on polyvinyl chloride, and one would have expected such a material to exhibit the desired impact resistant properties.

With respect to claim 2, it would be obvious to make some type of article from said composition, thereby imparting some utility to the extant polymeric mixture. As implied in the title of the invention, Heichele *et al.* manufacture molded articles from the resulting composition.

5. Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heichele *et al.* in view of U.S. Patent No. 4,670,509 to Aoyama *et al.*

The prior art of Heichele *et al.* relates to polyvinyl chloride molding compositions comprised of 80-98 % (by weight) of polyvinyl chloride, 2-20 % of an impact modifying resin, and 2-30 % of calcium carbonate (claim 1). The reference does not disclose the use of graft copolymers as impact modifying resins.

Aoyama *et al.* discloses a graft copolymer comprising 15-50 parts (by weight) of a graft monomer component made of 30-100 % (by weight) of methyl methacrylate and 0-70 % of a monomer selected from the group consisting of C₁-C₈ alkyl acrylate, C₂-C₆ alkyl methacrylate, unsaturated nitrile, and aromatic vinyl compounds. The main chain constitutes 50-85 parts of the graft copolymer, and it is comprised of 80-100 % of a C₂-C₈ alkyl acrylate, 0.01-5 % of a crosslinking agent, and 0-20 % of a copolymerizable monomer (claim 1). In summary, the composition disclosed in Aoyama *et al.* is identical to that recited in the claim of the present invention. The specific viscosity of 0.1 g/100 mL of an acetone solution of said material is at least 0.6 (claim 1). In view of these disclosures, a reasonable basis exists to believe that it inherently possesses the same physical properties disclosed in the claims of the present invention, namely, a η_{sp}/c value of 1-5 at 30 °C for a 0.2 g/100 mL acetone solution. Since the PTO can not perform experiments, the burden is shifted to the Applicants to establish an unobviousness difference. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990).

Aoyama *et al.* explain that the graft copolymer is used to improve both impact resistance and weather resistance of polyvinyl chloride resin without experiencing die swelling problems in the manufacture of the overall composition. Therefore, the modifying resin of the invention is superior to those typically used (*i.e.*, MBS resins) in PVC compositions. In view of this teaching, it would have been obvious to one having ordinary skill in the art to use the graft copolymer of Aoyama *et al.* in the composition of Heichele *et al.* to arrive at the claims of the present invention, and one would have expected such an embodiment to display similar properties.

With respect to claim 2, it would be obvious to make some type of article from said composition, thereby imparting some utility to the extant polymeric mixture. Heichele *et al.* and Aoyama *et al.* disclose molded articles prepared from the resulting composition.

6. The prior art made of record but not relied upon is considered pertinent to the Applicant's disclosure.

U.S. Patent No. 4,436,861 to Ushioda *et al.*

U.S. Patent No. 4,507,414 to McRowe *et al.*

U.S. Patent No. 5,124,373 to Baumgartel *et al.*

U.S. Patent No. 5,362,790 to Gloesener

EP 143 194 to Meunier

Art Unit: 1713

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rip A. Lee whose telephone number is (703)306-0094. The examiner can normally be reached on Monday through Friday from 9:00 A.M. to 5:00 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached at (703)308-2450. The fax phone number for the organization where this application or proceeding is assigned is (703)305-3599. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0661.



DAVID W. WU
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700

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November 6, 2001